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REPORT ON MANURES.

READ BEFORE THE BLACK OAK AGRICULTURAL SOCIETY.

November 19th, 1844.

The Committee on Manures, in pursuance of the Resolution under which they are required at the fall meeting of the Society, to report, concerning "the best and most economical mode of collecting and preparing manures; the time and manner of their application; the adaptation of certain manures to certain crops; with a detailed account of all experiments on the subject which have been carefully conducted, and the results accurately noted;" beg leave to observe, that the wide range of duty committed to them, requires more time than has elapsed since their appointment. Sensible however, of the vast importance of the subject, they have entered seriously and faithfully into the discharge of their duty, and offer the following as a Report, only in part.

It is due, however, to the Society to premise, that the direction which has been given to our labors, is one which can hardly be said to be comprehended in the resolution under which this Report is presented. Believing, however, that the points to which we are desirous of drawing the attention of the Society are of vital importance to our interests, we offer no apology for our apparent deviation from the letter of the chart laid down for our governance.

It is but a very few years since, within the limits of this Society, the benefits of manures were mooted at every social meeting; and even now, though no one is so outwardly heretical as to question their utility, there are yet many who have derived so little practical benefit from their application, that their faith in their efficacy is rather a confidence in the testimony of others, than the result of their own observation and experience.

Believing firmly as we do, that on the judicious use of manures depends the prosperity, not only of our Society, but of our State, we have devoted our labors to an investigation of the causes of the failures of manures, and have endeavored with the aid of our present state of knowledge, to point out the remedies.

The great object of all farmers, both practical and theoretical has been to accumulate and bestow upon the land a quantity of animal and vegetable matter in the state of progressive decomposition. This manure, called compost, has been for many years past, the only sort applied to our cotton husbandry in the inland districts; its value depends upon its origin; that from the stable always being much more highly esteemed than the product of the cow-pen.—These were the manures universally applied to all soils, whatever their condition. Limited however, as was the range of our manuring resources, our knowledge of the soils we cultivated was still more contracted. No idea whatever was entertained of their chemical composition. A brief inquiry into their physical condition was all the investigation bestowed upon them.

A new light has recently dawned upon us, and it becomes us peculiarly as the cultivators of products unknown to other portions of civilization, to embrace and improve it to the highest possible degree. This light is the thorough application of chemistry to agriculture. The cultivators of most other products, have for their guides the experience of ages and of the whole extent of civilization. We, stand as agriculturists, isolated from the mass of mankind; their practice is to us a mystery, their experience to us useless. Let us hail then, as the opening of a new era in our agriculture, the scientific discoveries which enable us to apply to practical farming the mysteries of the chemical laboratory.

The doctrine of the necessity of furnishing to plants, either as natural constituents of the soil in which they are required to grow, or in the form of manure, all the components, both organic and inorganic of which they are constituted and which are necessary to their healthful existence, was first distinctly announced by Liebig; the publication of whose book forms an interesting epoch in the history of practical agriculture. But, while announcing the important fact, he seems to have regarded it rather as an axiom than as a new truth, whose importance was to have been enforced upon the

attention of agriculturists. Hence, most readers of his works are conscious of no operation of husbandry so important as is the collection and supply of nitrogen to plants Indeed the philosopher seems to snuff ammonia in every breeze. All the pleasing impressions which others derive from the sight of a herd of cattle going to market, are lost to his imagination. He sees nothing but a mass of nitrogen unfairly abstracted from its native soil; and when man has finished his works and given up the ghost, his only concern is, that the nitrogen of his composition is laid down too low to be made available to vegetation.

But let us do justice to Liebig. He is not onesided in his views—he dwells particularly upon one subject, but his love of theory does not lead him to strain every point to support his views. Another class of philosophers have ridden a hobby which they call *geine*, to which they attribute all the virtues of manures. It would be best, before giving into the *modus operandi* of manures, to inquire first into the whole condition of the products of the soil; let us know first what they are, and we shall be unfortunate indeed if we do not find out what is good for them.

It is one of the blessings with which our lot is tempered, that all genuine work, all honest labor is fruitful;—so have we been benefited by every class of philosophers who have applied their industry to the consideration of agriculture. We are still hampered in our researches after truth, by the obtrusion of their fanciful theories; but a mass of light has been shed on the subject from which we are confident of deriving vast benefit.

All plants, we may say all vegetable products, are composed of carbon, hydrogen and oxygen—some have in addition a supply of nitrogen. These four elementary bodies are known in chemical language as the organic constituents of plants. The soil contains much carbonaceous matter; the atmosphere we breathe, is composed of oxygen and nitrogen in mechanical union, and water of oxygen and hydrogen in chemical union. The sources of these organic constituents, it will be obvious are inexhaustible. But there is another portion of vegetables which has heretofore been overlooked; it is the incombustible or inorganic structure; that which after combustion remains in the form of ashes, and to which the general and unsatisfactory name of salts is applied. Now in

our system of making manures, we have regard chiefly to the collection of organic matter, and we are surprised and disappointed when the application of this matter fails to produce the required effect. We shall try to show that the cause of this failure is to be attributed *to our neglect in providing for the inorganic constituents of the plants we cultivate.*

It is a rule which cannot now be disputed, that *wherever the analysis of a vegetable yields as a constant quantity an inorganic constituent, how small soever, such inorganic body is absolutely necessary to the healthful condition of the plant;* and it will follow as a necessary consequence of this rule, that *wherever the soil on which it is attempted to cultivate a plant shall be destitute of any one of its inorganic constituents, it will be vain to try to grow the plant upon it.* If the material do exist, but in very minute quantity, the crop will be correspondingly short and sickly.

Regarding this rule as an axiom in enlightened agriculture, we shall draw a few practical results therefrom, in relation to our own pursuits.

The first step necessary towards productive agriculture, and which falls within the province of our Agricultural Societies, is to have accurate analyses made, not only of the crops we cultivate, but of the soils on which we raise them, and of the manures which we use in their cultivation.

Our own Society has the honor of having made one of the first moves in this enterprize, and has furnished an analysis of her principle products. As cotton is our staple, we have devoted this report exclusively to the consideration of MANURES FOR COTTON. In the analysis of this product, including the wool and the seed, we find the following inorganic constituents:

Carbonate of potash with traces of soda.
Phosphate of lime, with traces of magnesia.
Carbonate of lime.
Carbonate of magnesia.
Silica.
Alumina.
Sulphate of potassa.
Chloride of potassium.
Chloride of magnesium.

Sulphate of lime.
Phosphate of potassa.
Oxide of iron and manganese.

Or by reducing these compounds to simple forms, we find in the indestructible portion of cotton, potash, lime, magnesia, silica, alumina, sulphur, phosphorus, chlorine, iron and manganese. This is the general result of the analysis made for this Society by Professor SHEPARD. As the same general result was produced by Dr. Ure's analysis, we have reason to believe that the before named ingredients are all necessary to the perfect development of cotton. Let us now examine the material or soil upon which, and the tools or manures with which we are to operate.

The analysis of our soils is yet to be made. The Agricultural Society of St. John's Colleton enjoys the honor of having taken the lead of her sister Societies in this enterprize. She has furnished an analysis of six specimens of soil taken from a cotton plantation on Edisto Island, of which the following is the general result.

Silica, alumina, peroxide of iron, carbonate of lime, and phosphate of lime.

Of the nine inorganic constituents of cotton therefore, it would appear that the soil of Edisto Island is deficient in four, viz: potash, magnesia, sulphur and chlorine.

It is to be observed however, respecting this analysis, that it was made before the publication of Liebig's Agricultural Chemistry, and before the important doctrine laid down in this report, became even partially recognized. It was made too, at a time when the attention of our planters was just beginning to be directed to the use of lime, and the respectable chemist by whom the examination was made, aimed rather to establish the amount of lime existing in the soil, than to demonstrate rigorously all the material, or as they were then considered, immaterial parts of which it was composed.

Among the soils sent for analysis was a specimen of marsh-mud, that agent which has so signally contributed to renovate the soils of the Islands on our coast. Its component parts appear to be, silica, hornblende, felspar, alumina, iron, lime and phosphorus. The hornblende and felspar of this mud furnish potash, lime, soda, magnesia, manganese, and fluorine; so that with the aid of this manure the soil is furnished with every constituent of cotton, except chlorine

and sulphur. It is difficult, however, to conceive how either of these elements can be absent from a mud which is twice, daily, flowed with sea-water * It is rather to be supposed that they are not enumerated as being too obvious to require special notice.

Having now ascertained the general composition of our cotton and of the soil upon which we raise it, let us now inquire what are the ingredients wherewith we propose to amend our soils so as to improve their productiveness.

The cow-pen and the stable have hitherto furnished all our manures. The droppings of our cattle and horses mixed up with the leaves of trees, form our composts. Of these, the product of the stable is generally found to be beneficial, while that of the cow pen is so often of so little value as to discourage the planter in his efforts to obtain it.

One of the most successful planters in this Society, has declared that for many years past he has ceased to perceive any improvement in his crops from the use of cow-pen manures. The stalks have indeed increased to a large size, but they either produce little fruit or fail to mature a good crop. It is obvious from this result that there can be no want of nitrogenized matter in the manure, or it would not promote rank vegetation. The defect must be in its inorganic constituents. And we may, by comparing the analysis of cotton and of our manures, find wherein the deficiency exists. Let it be remembered, however, that we are hampered in our reasonings by the want of full information, which it is the province of the chemist alone to give.

Dr. Ure gives the following as the result of his analysis of cow-dung; lime, phosphate of lime, magnesia, iron, alumina, silica, muriate and sulphate of potash—in other words all the inorganic constituents of cotton. It is to be remarked, however, that though all the ingredients are there, yet some exist in infinitessimal quantities Thus, all the chlorine, sulphur and potash in 3480 lbs., amount altogether to but 19 ounces; while the amount of potash alone in a thousand pounds of cotton in the seed, is equivalent to five pounds.

* By referring to the report of Prof. Shepard's analysis, p. 440 of the Southern Cabinet, it will be seen, that the writer has overlooked the statement distinctly made by Prof. Shepard, that "the saline matter of the marsh-mud is abundant, and that when treated with pure water, the fluid is strongly impregnated with all the soluble substances found in sea-water, and in addition with traces of sulphuretted hydrogen."—*Editor.*

Now [illegible]tton in the limits of this Society not unfrequent[illegible]d pounds of cotton in the seed, or five pound of potash on two acres of land. Now let us suppose a liberal supply of compost bestowed upon two acres; if we say a hundred loads to the two acres, we shall far exceed the average amount of manuring. Another liberal allowance would be, the supposition of the presence of the equivalent of three bushels of thoroughly dried cow-dung in each load of compost; and the measure of our liberality will be filled to overflowing if we suppose each bushel to weigh fifty pounds. Now the 15000 lbs. of cow-dung which is thus applied to the two acres, contain but five pounds of sulphur, chlorine and potash together, whereas the cotton to be obtained from the two acres would require five pounds of potash alone.* It is obvious, therefore, that if the soil is wanting in these ingredients, the crop of cotton to be obtained by this manuring must fall far short of an average good crop; and this becomes perceptibly so, when it is recollected that the whole amount of manure is not consumed in a season, but that its effects are continued for several years.

It is but just to observe however, that the urine of the cow yields by analysis a larger proportional quantity of these necessary ingredients, in which the dung is defective. But this advantage is hardly compensated when we reflect that in a thousand parts of this excrement, all the saline ingredients together do not constitute a fiftieth portion.

Chemistry has revealed the composition of the excrements of the cow; a manure which we find decidedly inferior in value to those of the horse. We have not however, the same accurate analysis of these last to enable us to compare them rigorously. We must use the light we have as far as it goes, and trust to logical deductions for some of the conclusions to which we shall arrive.

And, in the first place, chemists differ very materially in the partial analyses which they have made of horse-dung. Macaire and Marcet found 27 per cent. of inorganic matter or salts in that analyzed by

* Since the above was written we have seen Dr. Dana's statement, that the weight of cow-dung as evacuated is just 87 pounds. Now if 83 per cent. of this be water, our allowance of 50 lbs. as the weight of the dry dung is indeed an excess of liberality. The true weight of the dry dung is just 23 pounds, and the quantity necessary to equal 15000 pounds would be 6 2 bushels. Compare this with the estimate in the text, and we will see how very small a portion of these salts is conveyed to the soil through the medium of cow-dung.

them. Liebig admits that he has never found over 10 per cent., and Dr. Jackson of Boston finds somewhat under 8 per cent. These discrepencies stagger our belief in the results obtained. Suppose however, the lowest to be the most accurate, we have nearly four times as much inorganic matter in the excrements of a horse, as in those of the cow. It is to be remarked also, that phosphate of magnesia exists in a notable quantity in the dung of a horse, and is also a conspicious constituent of cotton The partial report of Dr. Jackson however, yields no potash or sulphur whatever. This consideration alone induces us to consider the analysis incomplete, and compels us, in the absence of a rigorous analysis, to resort to the indications afforded by a logical investigation.

The cattle whose excrements have been submitted to the test of analysis, are better treated in every respect than those from which we derive our manures. It is a common sense principle, and a rule of practical agriculture is based upon it in Europe, that the excrement of an animal shall bear a fair proportion to the food he eats. Thus, in the neighborhood of Hildesheim in Germany, the farmers pay a higher price for the excrements of protestants than for those of catholics, as those of the latter are impoverished by the numerous fasts enjoined by the church of Rome. The same must be true also of the lower animals. In Europe, when cattle constitute an important item in the farmer's wealth, they are fed with the most nutritious food which they are capable of digesting, and their excrements must partake of the nature of their food. The clover and turnips which the happy cattle of that country consume, are rich in the most valuable inorganic ingredients, and hold, in large quantities, potash, magnesia, sulphur and phosphorus. And yet, with all this advantage in point of food, their excrements are inferior in value to those of the horse. Far greater then must be the difference here, where the cow is left to her ingenuity to draw her nourishment from the soil. The grasses abounding in phosphates are not found with us; and it is more than probable that the small quantity of earthy phosphate they do contain, are all required to aid in the formation of the bones of the animal, leaving a very minute portion to pass out in the excretions.

The horse on the contrary is as well fed here as in any part of Europe; perhaps (for we have not yet learned the economy of

farming,) he is better fed. We have, therefore, a right to expect to find in his excrements, the constituents of the maize he eats, viz: potash, lime, phosphorus, magnesia and sulphur; and the quantity of sulphur will be sensibly increased when he is fed on peas. Moreover his urine yields nearly five per cent. of saline ingredients, while that of the cow falls short of two.

We can thus by investigating the constitution of the food which the two animals eat, dispense in a great measure with any particular analysis of their excrements, and safely come to the following conclusion: that the inorganic constituents of the excrements of a horse, are more than double in quantity those of the cow; and that while those of the latter consists chiefly of silicates, those of the former abound in the phosphates of lime and magnesia; two of the most important constituents of our cotton.

We would suggest therefore, the propriety of improving the quality of our cow-pen composts by the admixture of certain matters of known utility, and either cheap, if purchased with money, or easily accessible to every cotton planter.

And in the first place, we would recommend the addition of a bushel of gypsum for every acre, which it is intended to cover with the compost.

The advantage of this mixture is a double one. In the first place we add to the manure both lime and sulphuric acids; substances which perform important functions, not only in the growth of cotton, but of every crop we cultivate; and in the second place, we prevent the evaporation of the ammoniacal gases which have always a tendency to escape during the process of decomposition.

A strong prejudice prevails in many parts of South Carolina, against the use of gypsum; and this prejudice is strengthened by the consideration, that it was imported largely for the sake of its supposed fertilizing properties, and failed. But it should be remembered that at that time, the use of any manure was a blind practice, equivalent to quackery; that from the use of gypsum unaided by other agents, all virtues were expected; that it was esteemed a panacea for all agricultural evils, and that disappointment was the natural consequence of such unreasonable practices and hopes. And yet with all the odium attached to its memory, we have heard of some singularly favorable results attending its use. Among others, we

have heard that the late Thos. Palmer, Esq., from his plantation in St. Stephen's parish, the average product of which was 60 lbs. of cotton per acre, one year with the aid of gypsum, obtained an average of 120 lbs. If subsequent experiments resulted in failures, this may be accouted for in a variety of ways; the gypsum may, as lime will do, have exhausted the soil; this is no mystery in countries where lime is used; the seasons may have been unpropitious. And it may be true, that in the absence of any marked beneficial result, our planters may have been discouraged by apparent failures, and seized gladly this pretext for saving their money, and avoiding a labor to which they were unaccustomed. Of all men in the world, agriculturists are the most unwilling to follow improvement in their profession; and the readiest to discover the inutility of those suggested. Our planters long since knew that lime was used in their very neighborhood with favorable results; but it required the energy and fire of a Ruffin to make the adoption of its use general.

In addition to the gypsum, we would recommend that all the spare-cotton seed should be cast upon the compost heap. It is needless to dwell before this Society, upon the inestimable value of this manure. We would only suggest that the cow-pen would be materially improved, while the cotton-seed would be permitted to be spread profitably, though in small quantities, upon a much greater surface than they could be if applied in the usual way.

Lastly, we would perfect the compost by the addition of ashes. There is no manure, cotton-seed perhaps excepted, which applied singly to land, produces such striking results. The ashes of the oak, those which are most accessible to us, contain all the inorganic constituents of cotton, and are particularly rich in lime, potash, sulphuric acid, chlorine and phosphoric acid, while they contain so much of all the other constituents as to preclude the idea of deficiency in any.

It may be objected to the addition of ashes to the compost heap, that the mixture will hasten the evolution of ammonia, and thus rob the manure of its nitrogen. If, however, gypsum be applied previously or in combination with the ashes, this objection will in a great measure be removed; since the ammonia has an affinity for the sulphuric acid of the gypsum, with which it forms a solid body, the sulphate of ammonia. But even were this not the case, observation has taught, that it is almost impossible to expel all the nitrogen;

that which remains will unite with the potash; in the great laboratory of nature, fresh supplies will be elicited from the atmosphere, and the result will be the formation of the nitrate of potash or common salt petre of commerce; an agricultural agent at least as valuable as any preparation of ammonia can possibly be.

We close our report with the relation of a few facts coming under our observation, corroboratory of the remarks we have here offered.

On the 22nd day of August last, the Committee on Manures visited Fair Spring, the plantation of Mr. Robert Mazyck, to witness the result of his experiments with green sand. The marl, of which this is the only locality hitherto discovered in the State, is found in a ravine on the eastern side of Begin Swamp: it is of a lively green color, so soft as to be easily turned out with the spade, is full of fossils, indicating the presence of lime in its various modes of existence, and is said to be rich in potash. It is to be regretted that Mr. Mazyck did not accurately observe the quantity applied to his land; and it is rather too early in the season for us to be furnished with the result of his experiment. At that late period of the summer, however, a practical eye can judge with tolerable accuracy, what the result will be. It required but a glance to convince us, that the cotton manured with green sand, was worth three fold the best portion of his crop not so manured. We can give no better idea of its appearance than by comparing it to a pyramid of luxuriant vegetation, rising up so abruptly from out of the rest of the cotton, as to be at a glance obvious to the most careless observer: and the quantity and maturity of the fruit corresponded with the luxuriance of the plant.

Less striking in appearance on that same day, was a field at Somerton, manured with twenty loads of cow-pen compost, and twenty bushels of ashes per acre. But even this small quantity of ashes caused such a difference in the growth and maturity of cotton, as to be easily distinguished from that which had none. A part of the result of the experiment at Somerton is known, and corroborates our opinion, that ashes should be mingled with the compost. At the second picking of cotton, before the middle of September, four hundred pounds per acre of cotton in the seed, were harvested from that portion which had ashes. It is but just, however, to observe that in this case the ashes formed no portion of the compost; they were spread upon the list, while the compost were placed under.

One of the Commitee has recently seen a crop of cotton in St. Andrew's parish, which he thinks is estimated at too low a rate, at a thousand pounds of seed-cotton per acre. This result was effected by using the fine particles of compost at the bottom of the manure heaps. In this case the saline particles of the compost heap were concentrated at the bottom; for they always have a tendency to descend; being carried down partly in a state of solution, and partly by the mechanical action of rains. The results of the three instances here mentioned, are with us conclusive.

That the action of manures is directly in proportion to the amount and quality of their inorganic constituents, and that to the collection of these, the planter should mainly direct his attention.

Offering the accompanying resolutions as necessary to carry into operation the principles of this report, we shall no longer trespass upon the patience of the Society.

In behalf of the Committee,
FREDK. A. PORCHER.

Black Oak Agricultural Society, Nov. 19th, 1844.

1. *Resolved*, That it be recommended to the Society to appropriate adequate funds for the accomplishment of a thorough analysis of all the *products* of our soils, the *soils* themselves, and the *manures* we employ.

2. *Resolved*, That we earnestly recommend to our sister Societies throughout the State, to contribute to a similar analysis of their soils and productions.

3. *Resolved*, That the Representatives to the Legislature from these parishes, be respectfully requested to urge upon their respective houses, the necessity and expediency of perfecting the Agricultural Survey of the State so happily begun.

NOTE.

A few observations are yet necessary to perfect the report which has grown under our hands to an unexpected length. It will be observed that we have taken no notice whatever, of the amount of inorganic matter existing in the litter with which our compost is made. As this is an equal quantity in both sorts of composts, it cannot as a general rule, materially affect the relative value of either.

With respect to what has been said in the earlier part of the report concerning the theories of the chemists, we cheerfully acknowledge

our unfitness to sit in judgment upon their merits. We do know, however, when they give us satisfactory replies to our queries, and we are frequently painfully conscious, that their replies are any thing but satisfactory. And the worst of it too is, that they undertake to speak a language intelligible to every farmer. Now in our humble judgment, when a farmer consults a book purely scientific for information relative to his profession, he expects to find the language of science, and is generally prepared to meet it. What can be more unsatisfactory than the following: In investigating the composition of cow-dung, we consulted Dr. Dana's analysis. He says, "I give you the result of my analysis of cow-dung *in such terms as the farmer may comprehend*; water 83.60; hay 14; biliary matter, (bile resin, bile fat, and green resin of hay,) 1.275; geine combined with potash (vegetable extract) 0.95; albumen 0.175." If the farmer may comprehend this, may he not equally comprehend the results of a destructive analysis? Is it not likely that the farmer would better appreciate the value of silica, alumina, lime, magnesia, &c., than of this mysterious geine which is thus forced upon his attention? particularly when he is told that all these are constituent portions of the crops he cultivates. Let the chemist use the language of his profession and give the result of his labors, and the farmer will thank him.

The crop in St. Andrew's parish to which reference has been made, is not *all* manured in the manner described. Ten acres we believe were all so treated. It is, however, to this portion only, that the remarks in the report apply.

Communicated for the Southern Agriculturist.

ADDRESS,

Delivered before the Agricultural Society of St. John's Colleton, at their meeting Sept. 9th 1844, by J. JENKINS MIKELL, *and published by order of the Society.*

Gentleman of the Agricultural Society:

For the honor which you have conferred, in calling me to the station [President] which I now occupy, I beg to return my sincere acknowledgments.

There are no objects of an earthly character which can engage the attention of man, more worthy or noble, than those for which

this Society was formed. So were they esteemed in days of old, when to the especial care of a presiding Deity, they were entrusted; so were they esteemed when Kings viewed it an honorable privilege to lay aside their robes of royalty, and mingle in the pursuits of the husbandman; when Poets sung the praises, and Orators proclaimed the value of Agriculture. And so would it now be esteemed, if we would accord to it that station which it deserves; a station which elevates it to the dignity of a science—which invests it with the honor of being the parent of every useful pursuit, and which, from the quiet and unobtrusive path of its usefulness, would reflect the benevolence of that Being, whose glories are shadowed forth in every variety of form, fragrance and color. It surely, then, would not be either unprofitable, or inappropriate, on this occasion, for a moment, to see what are the claims Agriculture presents to be ranked as a science.

The being—man, "fearfully and wonderfully made" as he is, was not only originally composed of the materials of agriculture, but is day by day dependant for his existence upon the uninterrupted exercise of the same silent but efficient laws; influenced by the changes which are continually produced in the elements of air he breathes, converting its poisonous into nutritious properties, and the various mineral and vegetable transformations which are made of the soil, giving life and extention to his body.

Does not that pursuit deserve to be ranked as a science, whose principles rest upon the laws of nature—whose developments are based upon the authority of every science—whose maxims have come down to us from the first dawn of civilization, fraught with lessons of wisdom—whose yet unexploded regions of physical knowledge engage the researches of the philosopher and the man of science—whose labors give employment to every trade—unfurl the sail of the mariner, and speed the loom of the manufacturer—impart peace and happiness to the associations of domestic life—and give strength and permanency to national prosperity and glory? The connection which exists between Agriculture and the different arts and sciences, entitles it to this distinction. The time was, when it was believed that all the materials which entered into the composition of vegetables, were vegetable in themselves; and it is but recently, that by the aid of Chemistry, it has been discovered that the inorganic or mineral constituents of the soil, form so important

a part in the economy of vegetation, that without the presence of certain alkaline bases, many plants which now contribute to the support and comfort of man, could not be raised. If, for instance, wheat be sown upon lands deficient in potash and phosphoric acid, the plant may attain its ordinary growth; but a full devolopment of its fruit-bearing powers will be wanting. It is this faculty which plants possess of searching out and abstracting from the soil, the inorganic properties suitable to their peculiar wants, which renders the cultivation of land successively in the same crop unprofitable. We may give to it all the vegetable manures that are necessary to a full and luxuriant growth, still, if the mineral constituents, which exert so direct and important an agency in the fructification of plants, be wanting, the produce will be small. The known and enduring fertility of those soils which are formed from the lava of volcanic fires, is alone attributable to the supply of mineral deposits, which they have received from these eruptions. It cannot be questioned, that every plant in order to attain its complete development, must appropriate some portion of the soil upon which it grows. Can the conclusion then, be resisted, that after years of continuous and unvarying cultivation of a soil in a particular plant, it will exhaust that soil of the particular property which it has assimalated? In countries where various crops can be raised to advantage, the requirements of different plants are carefully ascertained by a chemical process, and the plants whose predelictions are different, are made to follow in succession, until there is a replacement in the soil of those inorganic substances which the first crop has consumed, the second rejects and so on, till the rotation is complete. The powers of the soil are kept up both by the vegetable offal which remains after the crop is harvested, and by the exudations which are continually passing from the roots of different plants, giving organic and inorganic resources for those of a different family. But with us, the case is different—we have but one staple plant. It behoves us then the more, to seek all the assistance which Chemistry offers for retaining those sources of fertility with which our lands were originally gifted. To do this, our first inquiry should be, what are the nutritive requirements of the cotton plant? What the ability of our lands for affording them? This certainly would be the course pursued in every other undertaking where there was a voice to be heard telling of its wants. Has Agriculture then no

voice? Yes, it too has a voice, and it has been speaking to us in our stinted barns and impoverished fields—in our ebbing fortunes and distressed credit. Let us but heed its admonitions, and afford it that attention which would make it the nursing mother of all our earthly comforts. What are the materials which the cotton plant requires for its fruitfulness? Our land originally contained them, but it would appear that they have been exhausted by repeated croppings. The humic acid, which is one of the most important constituents of a good soil, it is admitted, they still possess, for there are few if any of us, who do not every year freely apply vegetable manure, but this alone would give a plant without any fruit. Every plant requires for a full development of its powers, inorganic substances; some in greater, others in lesser quantities. Other communities more awake to the importance of this subject, are a head of us, and from the "Black Oak Society," to its honor be it said, has proceeded the first analysis of the cotton plant. Professor Shepard, who conducted this analysis, discovered three very important mineral ingredients in this plant, occupying a considerable per centage in its composition; potassa, lime and phosphoric acid, existing in the proportion of 31, 17 and 12 pounds to every 10,000 pounds of cotton-wool; and if to these be added the ash of the cotton-seed, 45, 29 and 19, we may form some idea of the draft that is made upon our lands for these ingredients, when it is remembered that the proportions in which they exist in the soil, is very inconsiderable.

Having seen what are the wants of this plant, let us now inquire what are the resources which we have for affording a supply. Marsh mud, the only manure which we apply, that contains any portion of inorganic manure, is in itself very limited in this particular; giving no more than six per cent. Its chief value, I am persuaded, consist in its alkaline basis. The more recent its formation, the richer it is in these earths.

The advocates of marl have, in their inordinate praise of its value, done its real benefit an injury, by ascribing to it properties, which it can be scarcely said to possess. As a mineral amendment of the soil, its value cannot be doubted; it furnishes two of the properties found in the cotton plant—the phosphate and carbonate of lime. I believe it of little or no value when applied upon lands deficient in vegetable ingredients. Its effects are mechanical; it attracts and retains the humus that is in the soil; and where there is an excess of

humic acid, the calcareous properties in which it abounds, corrects this deleterious quality, and by forming a new combination (humate of lime) it gives to the plant a new and active source of nutrition. We have not, as far as I have seen, any deposit on this Island that can properly be denominated marl. A combination of lime and clay is marl; such a combination, I can readily perceive would be beneficial to our high and sandy soils, by giving to them adhesiveness. The deposit which we have been calling marl, is fossil shells, valuable chiefly for its calcareous properties, and like lime, should be used in connection with putrescent manures, where our intention is to apply it as a manure, and not as an amendment. Lime, as a chemical agent, is highly valuable; it should be liberally used in making compost manures, for whilst it corrects what acidity is generated from the decomposition of the mass of vegetable matter, it, at the same time, prevents the escape of the carbonic acid gas arising from this decomposition, as also the nitrogen proceeding from the manure of animals. A chemical writer, in speaking of the uses of lime as a top-dressing for land, may explain to us the causes of some of our objections to it when used by itself. When applied upon land, he says, whilst "attracting carbonic acid from the atmosphere, it acts unfavorably on the growing plants; when this ceases, and the acids generated in the soil by the decay of vegetable matter begin to act upon the carbonate of lime, then a favorable influence is perceived." We perceive then that its effects are not immediate, and that in proportion to the organic matter in the soil, will be its beneficial results.

Potassa, the second inorganic component of the cotton fibre, is derived from potash. The ashes of all plants furnish potash, one of the most active and extensive agents in the vegetable kingdom. To its exhaustion in our fields by the constant culture of the cotton plant, and the close pasturing which they suffer from the grazing of cattle, whilst they are said to be resting, I am almost ready to ascribe the declining fertility of our lands. The grasses which cover our fields when undisturbed by cattle, give to the soil no inconsiderable portion of this alkali, in the decomposition which they undergo; they extract but little of this ingredient from the soil, whilst in elaborating, through the vital action which all plants possess, the gases of the atmosphere, they acquire a substance which returns

more than they have taken. The animals which are allowed to pasture upon our lands whilst uncultivated, can only return to them in the form of excrement what they have taken from the soil, with this important deficiency, that just in proportion to what they have assimulated, the lands must necessarily loose. Where there are no extensive marsh ranges, where these animals, at least a large portion of their time feed, and are made by their nightly pennings to bestow upon the arable lands more than they have taken from them by their occasional grazings, I am persuaded our lands would be benefited by reducing their number. It is said by Liebig, from whose writings I have derived much pleasure and instruction, that the country about Naples famed for its fruitful corn-fields, "have been cultivated for thousands of years without any manure, or any part of what is annually removed from the soil being restored to it, and where its productiveness cannot of course, be ascribed to humus; the method of culture must alone explain its permanent fertility.

"A field is cultivated once in every three years, and in the intervals sparingly pastured. The soil experiences no change in the two years, during which it then lies fallow; further than that, it is exposed to the influence of the weather, by which a fresh portion of the alkalies contained in it, is again set free and rendered soluble." I would ascribe the known fertility of our marsh lands, which, after a few years cultivation, loose what portion of vegetable matter they originally contained, mainly to the presence of the alkalies in which it is known they largely abound, and its peculiar productiveness in the cotton culture, to the predeliction which that plant has for soda. The experience of every planter has taught him that resting his lands for an interval of two years, will almost invariably ensure him a good crop. The fact he knows—the cause he has either miscalculated or never looked into. The alkalie of which I have been speaking, prevades the whole vegetable and mineral kingdoms. "The time will come, (says the distinguished author from whom I have already quoted,) when our fields will be manured with a solution of glass, (siliciate of potash.") Our high poor sandy soils contain it—a fresh supply is disemboweled when they are at rest, by the chemical changes which the atmosphere exercises upon the soil. A crop purchased however, at the expense of two years rest, is too great a sacrifice of capital, we must therefore adopt some artificial mode of restoring this property to our lands. It is ascertained that

a very minute quantity only is necessary in the economy of vegetation, although minute, it is nevertheless indispensably necessary to the fruitfulness of plants. The ashes from our fire-wood, and from the clearing of new grounds, should be carefully collected and spread over our manure heaps. All vegetable and animal manures contain some portion of potash, but in quantities quite too small for the demand which our unvarying cotton culture makes upon our fields.

The third and last principal inorganic constituent of the cotton plant, is phosphoric acid—whilst the ash of the cotton fibre gives but 12.30, that of the seed gives 45.35. This result should indicate the great usefulness of this seed as a manure for cotton. Most soils contain this acid, and that in proportion to the calcareous properties which they possess, for the nitrogen which is a constituant part of it, is attracted from the atmosphere by the carbonate of lime in the soil. The bones of all animals as well as their manure furnish phosphoric acid.

You will perceive, gentleman, that I have employed your time exclusively in a review of those mineral resources, which an All-wise Creator has provided for the petpetual renewal of those life-giving principles which are necessary for the support of his creatures. To the other great department of agricultural science—the organic constituents of the earth, I shall not invite your attention. They have frequently been presented to your notice with more force and elegance than I could bring to their support. Nor am I willing to detain you longer by exhibiting the connection which Agriculture bears to the science of Botany in the structure, economy, properties and diseases of plants, and to Entomology which treats of the habits of that tribe of insatiable depredators, before whose ravages this beautiful and fragile plant of our solicitude sickens and dies. Enough I trust has been said, to satisfy every intelligent mind, that Agriculture is not a mere pursuit devoid of all intellectual enjoyment. The scientific planter looks around him, and sees scattered on every side, by the bountiful hand of nature, every thing to engage his practical as well as theoretical efforts. The portraiture of the Divine mind stands displayed before him in all its noble attributes of wisdom, goodness and benevolence. He examines the plants of his creation, and in their living principle, nutrition and growth, sees his matchless wisdom. He casts his eye over the beautiful earth, robed in the rich foliage of spring, or loaded with the ripened

fruits of autumn, and his heart is filled with gratitude for his provident goodness. He analyses the innumerable substances which compose the soil—perceives their divisions and subdivisions, and stands amazed at the Great Directing Hand which could thus combine and arrange them. I do not mean that every planter should become a chemist. But I do mean, that every gentleman who pretends to be a planter, should at least know the elements of that science, the success of which is his daily care. I do not wish him to tell me the destructive properties of every mineral and soil, but I would have him at least understand those general and simple principles, which go to produce—to sustain, and to destroy vegetable life—which inform and instruct us, why if certain plants are placed upon certain soils, they will germinate and produce, and in other soils will wither and die. These elements of the science, every man may acquire at his fireside by his own reading. They are spread out in a simplefied manner in almost every book of Agriculture. An English Philosopher has well said, "that what is worth doing at all, is worth doing well." Let us be admonished by this advice, and let our endeavors be to make Agriculture what it really deserves to be—not a mere thing of bodily occupation, but a science, which is to engage the loftier attributes of mind – a science, which is to call forth our ingenuity, and better the condition of our fellow beings. Let the noble example of those who have preceeded us, rebuke our present indifference—let their zeal and fervour plead in behalf of our neglected duties; and then may we hope that this Society, founded upon a mutual sympathy, produced by similar pursuits, and devoted to the development of the resources which lie at the foundation of individual and national prosperity, again will resume its place in the march of improvement, and occupy the station due to the large interest its members have in the accomplishment of that pursuit, with whose fortune they are so intimately and indissolubly connected.

USE OF MARL IN RAISING CORN.

SPRINGFIELD, ST. ANDREW'S, Nov. 29th, 1844.

To the Editor of the Southern Agriculturist.

Dear Sir,—I owe you an apology for the delay in complying with your request made me when in the city, viz: to send you a statement of the preparation and cultivation of the acre of corn, from which, the ears left at your office were taken.

Having been employed in preparing an account of the marl experiments made by me the last season, to forward to the State Agricultural Society, (a copy of which will be handed you for publication in the Agriculturist,) is the only plea I can offer.

Very respectfully,

Your obt. serv't.

FRAS. S. HOLMES.

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SEED.

The seed was originally obtained from John R. Mathews, Esq., formerly of Edisto Island, and now residing in Habersham County, Georgia; a few grains of which was given to me in the autumn of 1842, as the Georgia Red-flint, and was planted in my garden the following spring (1843.) The stalks were very large and tall, with wide blades of a dark green color, and producing one good ear each, of large size and well filled. My opinion is, that though more productive than *our flint*, it is not more so than the gourd-seed, and certainly does not merit the name of flint, having none of its properties, the shape of the grain only being similar.

It is like the gourd-seed, a soft grain, producing, when ground, much flour, very liable to the attacks of the weevil, and consequently does not keep as well as the hard flinty kinds.

It resembles, and I believe *is* the Hæmetite or blood-red-Indian.

Large white cob—red grains, 1? a 18 rows.

Average number of grains on a cob 750.

A few selected ears contained severally 974, 995, and 1,003 grains, and weighed 20, 21½, and 22¼ ounces.

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PREPARATION AND CULTIVATION OF ONE ACRE, 1844.

This acre is 210 feet square, good high land, yellow sandy loam or such as is called good cotton land. It has been planted four

years successively by me, viz: 1840, '41, '42, and '43, and manured each year with cotton seed in the hill; a double handful applied to each when the corn was knee high.

In 1840 and 1841, the yield was a good one, say 20 bushels; but the two last yesrs '42 and '43, was not more than 12 and 15 bushels. It was each year planted at the same distance, 5×4 feet, 2 stalks.

I am thus particular, in order that the nature of the soil be well understood, before I proceed in describing its cultivation in 1844—the last season.

After removing the stalks off this acre, early in March, run two furrows in each of the old alleys with a large two-horse No. 10 Davis plough, thowing the furrow slice on each side of the old bed, thereby deepening the old alleys considerably, leaving a fresh furrow full six inches deep and eighteen inches wide. Twenty (20) single-horse cart-loads of half rotted compost was spread in these furrows; after which twenty-four (24) loads of marl (71–100) or say one hundred and thirty bushels of marl was then broadcast over the whole acre, but from the uneven state of its surface, much of the marl fell or rolled into the furrows immediately on the top of the compost. It was then listed with the hoe, and all the trash, marl, etc., from the old beds, turned into and upon the manure, which was spread in the furrows made in the old alleys.

The ploughs, (No. 7, Davis or Eastman) followed and broke up the old beds, thus reducing the surface of the acre almost to a level.

On the 28th of March, the chops or holes for receiving the seed, was opened with the hoe, two feet apart from centre to centre of each chop, which was one foot long, and placed immediately above the manure in the listing made by the hoe. Into these, four grains were planted with the intention of trimming out to one stalk at each corner of the chop, which would give a stand about one foot apart. To insure this, I should have dropt eight grains instead of four, but in shelling the corn for seed, I found it so much worm-eaten, I was afraid to drop more or I should not have had enough to plant the acre; and even with this precaution, I was compelled to plant the last quarter with the worm-eaten grains, which was at first rejected.

It came up very badly, and having no more of this seed to supply, my only alternative was to use the common mixed variety of

crop corn—this was done, but from the severity of the drought, it was a long time coming up, and still an indifferent stand.

Once up, the corn grew rapidly, and exhibited very clearly the power of the marl in absorbing moisture from the atmosphere, and thus enabling the plants to grow; when those on the next acre, but unmarled, died off in many places—and all suffered extremely.

As soon as those plants from the first planting attained their fourth leaf, a small plough (No. 6, Davis) set lightly, was run close along on each side next the plants, and throwing the furrow slice from them; into this furrow, live cotton-seed was lightly sown, at the rate of about twenty bushels per acre, the hoe following and covering the seed by simply hauling back the furrow-slice. This was the only time the ground was disturbed after planting the corn, but it was hoed four times with *sharpened* hoes, barely shaving out the grass. Two hoeings would have been sufficient, if the land had been free of joint and nut-grass.

The plants from the first planting, was on an average, one-third higher than those of the second; the former thereby shading and obstructing very much the growth of the latter

The under blades was stript on the 22nd of July, and the upper ones on the first of August, at which time it was turned down.

On the 6th of Sept. it was broken in and measured, when it was found to yield seventy-four bushels and ten quarts, (74 10–32 bushels.) In addition to this, there were 46 cobs taken out of the acre, which were destroyed by the poultry, (the acre is near the settlement) and over one hundred ears were selected (before harvesting) by my friends who visited the acre, and by myself, to give to individuals who had expressed a wish to have an ear.

During its growth, it had been variously estimated to yield from 60 to 80 bushels; my own opinion was that it would not exceed sixty-five (65) but I think it can be safely put down at 75 bushels.

My object in planting this acre was to compete for a premium offered by our Agricultural Society, viz: "a silver cup for the greatest quantity of corn produced on one acre three successive years." As there was no opposition, I withdrew, but am now preparing the same acre for competition with a number of planters, who have been brought out by my success, and who will dispute *every inch of ground* with me the next year, as many of them are

more experienced in corn planting; but this does not deter me from giving you my proposed plan of procedure.

The acre is, as before said, quite level, and covered with a good crop of crab-grass, and the stalks have been removed to the cow-pen. It is my intention in a few days, to spread an additional 100 bushels of marl broadcast over this grass, and with a double horse plough, turn the whole under; the vegetable matter in and upon the land, warrants the additional supply of marl—which otherwise would be injurious—as this marl is very strong in carbonate of lime, (say 71–100) I should have preferred spreading the compost (which I intend to apply hereafter,) immediately on the marl before ploughing; but *that* is not yet ready, and I must proceed without it, in order to afford time for the grass to be well rotted before a second ploughing is made, which will be a short time before planting.

I shall not leave a stand one foot apart from stalk to stalk, as I am satisfied it is too near; but the distance shall be fifteen inches; the seed shall also be drilled and not planted in chops, or drilled in. I object to planting in quincunx style; my opinion is, corn must have air and room to spread one way certainly; which it cannot do if planted in that style. I shall retain the old plan of five feet one way; the plant does not send out its leaves or blades *all around* the stalk, but generally from two opposite sides; therefore you can press them nearer together one way, but give them space to expand their long arms in search of air and moisture, the other way.

I am pleased and satisfied with the mode of applying the cotton-seed last year as an after dressing, until some of your experienced correspondents will point out a better one.

How would cotton-seed ground in a cob-crusher with corn-cobs do? I have not a cob crusher to try it, but hope some of your subscribers or correspondents will, and let us have the result.

The cob will absorb the oil from the seed—the germination of the latter will be prevented, which is very important—and the cob itself contains a large portion of saccharine and other matters, important to the formation of the new ear.

As regards working the crop, I shall pursue the same plan, satisfied that with this grain, "*the best working the crop gets, is that which it receives before it is put into the ground.*"

I has been generally the opinion of our planters, that one hundred bushels cannot be made in the low country of Carolina, from one

acre; but I do believe that with the assistance of marl, it will, after a few years be found not impossible.

The present system is to manure entirely with putrescent manures; the consequence is, the land is completely glutted with manure, which in dry seasons fires the plant, and in wet ones retain too much water, which in combination with the superabundance of putrid matter, rots the tender roots and fibres of the corn. I would rather take the chance of a crop from a piece of good land manured with twenty cart-loads of good rotted manure, than of one manured with one hundred cart-loads.

If you are determined to make an entire soil for the plant, you must give it, in addition to the putrescent matter, sand, clay and lime, the necessary constituents of all good soils.

For the Southern Agriculturist.

FENCES AND FENCE LAWS.

It frequently happens that a law continues to be in force when the reasons for its enactment have ceased to exist, or have been greatly modified. The remark is applicable to our fence laws in South-Carolina—at least it applies to many parts of the State, and particularly to the Islands and the adjacent country.

When our laws on this subject were framed, the country was a forest; wood, an encumbrance; the field under cultivation a small spot surrounded by rail-timber of the best quality; the product of the soil of no great value; cattle and hogs an important article, not only for the home market, but for exportation. Under these circumstances, nothing was more reasonable than to fence in the cultivated field, and to give the live stock of the planters the advantage of the fine range afforded by the forests and cane-brakes. To fence in the small field, and to fence out the large stock was the obvious policy of the whole country. But how is all this changed by the cultivation of cotton? The rail-timber is all gone; there is even a want of wood for fuel in many places; the cotton fields are the great object of care and solicitude; cattle are kept merely for plantation use—for manure to the cultivated land.

Is it not clear then, that with this reverse of circumstances, the law should be reversed? That instead of fencing in the field, we should fence in the cattle.

At present, a planter must fence his field whether he has stock of his own or not; whether he has rail-timber or not. He may be annoyed and injured by cattle coming from places ten miles off; cattle which the owner never looks after or cares about. Is it not obviously just, that the owners of stock should be obliged to take care that his property shall do his neighbor no harm, now, when the value of the cultivated field is incalculably greater than the value of the trespassing cattle? If a planter is so situated as to make it desirable for him to keep no stock himself, is it not just that he should not be obliged to keep fences for his neighbor's stock? The policy of dispensing with fences, except to enclose cattle, leaves every man to pursue his own plan—that which best accords with his own views and position. One man wishes to keep stock, let him do so at his own expense, not at the expense of his neighbors—another wishes to keep none,—he has no timber, he can employ his time better than in making fences, do not compel him by law to make a fence of two or three miles whether he will or not. One man keeps a few cows, he will require a small pasture. Another has a large stock, he must make a large one.

The expense of labor or materials would thus be proportioned to the advantages enjoyed by each individual—just as it ought to be.

Nothing is so productive of bad feelings between neighbors, than the irritation constantly arising from this quarter—trespassing cattle. It ought to be remedied.

There may be parts of the country so nearly in the condition in which they were when the law was passed, as to make a change unnecessary or injudicious. Let them remain as they are. It is by no means requisite to have one rule for all parts of the State. Indeed, nothing would be more impolite or absurd in a matter of strictly local concern. It is obvious that what would be wise legislation for the extensive pine-woods of some parishes, would be very bad for Edisto Island. Let each community determine for itself, what is the best policy for itself, and let other communities do the same. I am not sure whether each parish might not be permitted to regulate this business for itself, as it now does other matters of mere

parish concern and importance. However that may be, there is no doubt that the Legislature of the State would, at the request of each parish or district, so modify the law as to adapt it to the wants and interests of each one of them whenever it can be done without injury to others.

A. B.

M'CARTHY'S COTTON GIN.

We have heard but little of late respecting M'Carthy's Cotton Gin, of which great expectations were entertained, and conclude that objection or difficulty was found in working it to advantage. We have just been informed that one of them was in operation near Walterboro, in which improvements had been made by the proprietor Mr. J. C. Glover, removing all the objections discovered. We request for the benefit of the planting interest—that Mr. Glover will favor us with such particulars as he may think proper, showing the late difficulties and the present performance of the machine.

EDITOR.

SUGAR AND MOLASSES.

A friend has presented us with a small sample of Sugar and Molasses, which was manufactured by Capt. Ulesses M. Robert of Barnwell District, from a lot of cane grown on his plantation the present year. The cane grew upon two acres of ordinary pine land for that section of the District, being well prepared and highly manured before planting. The summer proved favorable to its growth, and the autumn to its maturity, no frost having fallen, materially to injure it. The product of the two acres was eight barrels of Sugar and a proportionable quantity of Molasses.—The samples of both would be pronounced good for any section of the sugar region, and the sugar readily commands $8 per 100 lbs. in the neighborhood. This is a highly encouraging experiment, which we recommend to our planters generally, so far at least as to make a sufficiency for home consumption. We should be pleased to see our planters in this State gradually resorting to a system of agriculture, which will relieve them from all foreign supply in the prime articles of domestic use. Let them instantly commence the good work of reform, and by planting more grain and less cotton, place

themselves in a condition to rear their stocks of horses, mules, cattle and hogs, many of which are now furnished by the Western States, which greatly tends to drain us of our money, and gradually impoverishes our citizens. We should be pleased to see a meeting of the planters of the Districts, at which resolutions should be passed, by which each individual would pledge himself to raise and cultivate every article of domestic use of which the soil and climate are capable, and to manufacture his own clothing for his negroes, at least. We should thus lay the foundation of greater prosperity and independence, and provide thereby a social remedy against the pressure of low prices and hard times. [*Edgefield Advertiser, Dec.* 20

SILK YET TO BE GROWN IN THE SOUTH.

A nation increases in wealth as the product of labor is the more available in a profitable point of view; and we might say in this way alone, for the wealth taken to it by emigrants is too small to note; an individual on the contrary, may go to sleep 'well to do in the world,' and awake in the morn rich; but as the wealth thus acquired by speculation is taken from another, the nation is none the richer.

We think one great utility in associations, whether of a community, or in political masses, is to direct this labor, that it may be more profitable; but whether it would be well for the State to give its patronage or not, we would not say. There is one thing certain, however —Agricultural Societies can and should give their aid, and in fact this is their important aid to their country. If by any possible means, labor that is now profitless could be made productive, of course we would not only have a profit on this labor, but all the product would be a clear gain. The question will now force itself, can we direct labor so as to make it more profitable, and can we bring unproductive labor into active use, in what way, and on what subject? We think we can both direct a portion of present labor, as also that which is now unproductive, to more profitable use, by the offering of a premium or bounty sufficiently large to cover all risk—and on the growth and manufacture of silk.

We believe that our latitude is the best for cotton. No one doubts this; because success has followed the well-directed efforts of our people, and even now we do not either produce the greatest yield at least expense, or the best, although the experience of years and the ambition of our citizens are concentrated on this. Our climate is equally well adapted for wool, wine and silk as for cotton, and some one of these could be made without any corresponding expense.

On many farms there are some blacks that are too young, or too old, or too weekly to work in the farm. These can, with a trifling

expense of trees, land and fixtures, make a fair average crop by raising silk.

The land should be well ploughed, rich enough to grow twenty-five or thirty bushels of corn per acre, planted in cuttings or roots, in rows of about four or five feet apart, and close enough to grow a hedge; if well cultivated and kept as a shrub, small children of four to six or seven years of age can soon be learnt to pluck the leaves and carry to the co-coonery, where a larger person can feed. By good attention, and good management 50 lbs. of silk can be made from one acre, which, if well reeled, would be worth say $5 per lb.—or even $4 per lb. would yield 200 dollars per acre; all of which can be done by four women in twelve weeks, or equal to the work of a hand a year. The estimate of cost by the northerners for silk, ready for the market, is $2 to $2 50 per lb., not including trees or land, or to grow cocoons at a cost of $1 per bushel or 10c. per lb. Much of this would be nothing here; for the labor could be well performed by unproductive hands—but this is not the only consideration; for if the culture could extend so far as to employ a third of the hands, it would be as productive as cotton, and at less expense, thus enhancing the value of cotton.

Our consumption of silk is full 18,000,000; and until the production could come in proximity with this, there would be no fear of glutting the market; but even with a glutted home market, we have a market abroad as great as for cotton. England with her manufacturing of 75 millions, has to buy her raw material from France, Italy, China, Piedmont, Valentia, &c.; which we could be producers for.

The time was in '38 and '39, when the writer of this urged this same matter on friends east of Pearl River, but they jeered at it as a whimsy of our brain. Thanks to the indomitable energies of our northern and eastern brethren, they have proved beyond all question that with all the difficulties of a northern clime, they can rear, without experience to aid them, 40 to 50 lbs. of silk per acre, much of which can be reeled to be worth as high as $6 per pound; but placing it only at $4, and the cost of production at even $3, there would be a nett gain of $40 to $50 per acre: and should we calculate cotton similarly, we presume no one would calculate on over $10 per acre—besides a little crop can be taken to market in a pair of saddle bags.

We have no intent to advise silk farms, or breaking up cotton culture. No! No! This is our trade; but we can plant a few acres in Mulberry, and make for sale a few hundred dollars worth of silk. This only requires some 30 days to grow the cocoons; after which these hands can gather fruit for market or reel the silk, and when the cotton crop is ready, aid in gathering it.

Our desire is to aid our trade, our profession, by all the collaterals possible, believing firmly that it is prudent to either look out another culture, or by some means to reduce our present growth of

cotton. Our brother farmers may think it to be all stuff, but they will feel it not to be so before this crop is disposed of. * *

Is it not high time to seek other channels for our laboring people? And how better to the same extent than in growing silk? It is an article, that will bear exportation better than any thing known, except bullion, or such valuables, twenty dollars worth not weighing over one pound; we judge, of some fabrics.

We do know that cocoons have been raised and silk reeled without any instruction, and believe the whole process requires only ordinary care and attention.

As before said, there is no danger of an overstock. With a demand at home at present for $15,000,000 worth, it will take many years to catch up; and the demand will increase as our knowledge and tact increases; and as this is done, it will get cheaper and then become even more required. We firmly believe, that if in 1860 there could be a crop of silk made, to double our present crop of cotton, that the demand would be near what it now is.

To those who wish insight into the business, we recommend the perusal of No. 6—"Useful Books for the People,', published by Greely and McElrath, in the "Tribune Buildings," New-York; price 25 cents. The work is styled—"A Popular Treatise on the Culture of Silk;" sold by booksellers generally.

We have fed silk worms some three years, and had some silk reeled, done without instruction; and we think that an old woman, (unfit at least for hoeing in the spring,) with some three or four children, from four to seven years old, can make their 50 or 60 bushels of cocoons, worth $2 or $3 per bushel. Even at $2, here would be a clear gain to the State of $100, and if carried out through the whole State, the gain would be immense. There are some fixtures necessary, and some little expense in purchasing eggs and trees; but the expense is trifling; and the fixtures can be made good enough by many females. If our females would take this matter in hand, they could add to their comfort and independence very much, and would aid the State; for so soon as cocoons would be ready, with the prospect of a supply, manufactories would be established. P.

[*So. Western Farmer.*

HEMP.

Hemp was, until these last few years, scarcely cultivated any where except in Kentucky, and nearly the whole production was devoted to the manufacture of cotton bagging and bale rope. It was not, we believe, used, or even tested in the manufacture of ship's cordage, which is the great source of consumption, and for the supply of which our country has long been dependent upon Russia. Our

import of hemp amounted in 1839 to $607,766; in 1840 to $686,777; in 1841 to $609,201; in 1842 to $267,849; and in nine months in 1843 to $228,882.

The cultivation of hemp having extended into Illinois and Missouri, occasioned a necessity of seeking new modes of consumption, and the attention of Government was called to the subject during the session of Congress in 1841, asking that the fitness of American grown hemp for use in the naval service might be fairly tested. The result of various experiments has, we are told, been highly favorable, and we hope that the day is not far distant, when American grown hemp will not only supersede the use of Russian in our own marine, but find also a ready market in Europe.

The following statement of hemp received at New-Orleans, may help to shew the rapid increase of the cultivation of this important article; in 1841 and 1842, the entire receipts at New-Orleans were only 1,211 bales; in 1842 and 1843, they rose to 15,000 bales; and in 1843 and 1844, they reached 38,000 bales, or about 5,000 tons—the increase being almost exclusively from Illinois and Missouri.—[*See New-Orleans Price Current, Sept.* 2, 1844]

In the census of 1840, the return was made of Hemp and Flax together, and the agricultural statistics published by the Patent Office, are made in the same manner; so that they afford no information as to hemp alone. [*Nat. Intelligencer.*

VINEYARD AND NURSERY AT BRINKLEYVILLE, N. C.

We have a long communication from the esteemed Sidney Weller, P. M, at Brinkleyville, detailing his experience in the growth of fruit trees and vines at the South, in which he states that he has for fourteen years, as an incidental business, cultivated the vine—at first, with but poor success, from want of experience and adopting foreign vines and foreign modes of culture; but latterly, having adopted native vines and an "American system" of culture, he has succeeded to his entire satisfaction. He has found the following varieties of the grape to succeed well. The Scuppernong, (ranks first south of lat. 37½ deg. but of no superior excellence north of that,) Norton's Virginia Seedling, good every where so far as he has heard, Weller's Halifax, Vine Arbor, &c. The Catawba, Isabella, Herbemont's Madeira, &c., have not done as well with him. The Elsinburgh proves to be a delicious fruit, much admired on account of its fine flavor and freedom from pulp. He has not tested it for wine. From several of his Scuppernong vines, he has made from half a barrel to a barrel each of vine. One of Norton's Seedlings, five years in culture, produced 2¾ bushels of grapes and 8 gallons of juice. He says 800 gallons wine per acre is considered a capital

yield in Europe, but from his experience, he thinks 2,000 gallons per acre, by good culture, can be realized in North Carolina. His culture consists in keeping the ground clear of grass and weeds, the year round, so that all the leaves and litter from the vines can be incorporated with the soil by scarifying it when needful with a harrow or cultivator. In some instances however, instead of adopting this course, he covers the ground several inches deep with pine leaves or other litter, which, renewed once in two years, keeps down all extraneous growth, and saves the labor of annually working the ground. After a vineyard is well under way, no other manure is necessary. He has made this season, 15 barrels of wine, and is just commencing on his Scuppernong vines, which constitute his principal crop, and from which he expects to increase the amount to forty barrels. [*Albany Cultivator.*

IMPROVED FARMING IN VIRGINIA.

Mr. H. R. Robey, near Fredericksburg, Va., gives us the following favorable account of the effect of agricultural papers in improving the husbandry of his neighborhood: "When I commenced farming, I determined to try the new system of husbandry, because I saw the old plan would not do; the farmers were all going backwards, or getting poorer every year; my new neighbors laughed at me, when they saw me occupying so much of my time in hauling mud and sods from the swamps to put in my manure pile, and asked where I got that notion from. My reply was, from the Cultivator. They laughed still more, and called me the book farmer—said I would soon find out my folly, and go back to the good old custom, as they call it. Many of those men have acknowledged since, that I have been pursuing the right plan. I have now eight barrels of corn growing, where six years ago one barrel could not be grown; and all my information has been derived from agricultural papers. Some of my neighbors for two or three years past, have been taking the Cultivator, and you can perceive an improvement upon their farms already. They are now not content to put up with the bare necessaries of life. A spirit of improvement seems to have taken hold of them; they begin to cultivate improved varieties of fruit for market and for their families; thus adding profit and pleasure, where neither could be found before they began to read agricultural papers.

[*Albany Clutivator.*

A writer in the Michigan Farmer, recommends butter-milk for the destruction of lice on cattle.

MADDER.

The amount annually paid by this, to foreign countries, for this article, used in dyeing, is perfectly astonishing. Mr. Ellsworth, in his report, estimates the amount annually imported at five thousand tons! The wholesale price is now from fifteen to eighteen cents a pound. At fifteen cents, the annual importation amounts to the round sum of one and a half millions of dollars, for an article that can be produced as good and as cheap at home.

This is not theory. Mr. Joseph Swift, of Erie county, Ohio, planted nine acres, and allowed it to grow four seasons, and the crop was harvested and sold in 1842, and an account given of it in the New Genessee Farmer, for March 1843. The product of the best land was two thousand pounds per acre, (and he is certain that with his present knowledge, he can produce three thousand pounds per acre. The labor required per acre to raise and prepare the crop for market, was from eighty to one hundred days' work, and his figures show, after paying for the labor and use of land, a nett profit of two hundred dollars per acre.

Although the crop requires several years to arrive at maturity, and needs considerable knowledge and labor, yet the value of the crop is greater in proportion, to the cost and the quantity of land it occupies, than any other farm crop that can be named.

Our farmers should give more attention to the cultivation of this article, while the profits are so great. [*Western Farmer.*

PROFIT OF GROWING MUSTARD SEED.

We have recently purchased from J. H. Parmlee, of Ohio, a part of his crop of brown mustard seed, raised, as he informed us, on twenty-seven acres of good rich land, prepared with as much care as is usually bestowed upon good land. The seed, he says, was planted in rows, one foot apart one way, and two feet the other. The crop was well worked during the season, and when near up, was cut with sickles, laid on sheets or wagon-covers, hauled to the barn in the sheets, and then threshed and fanned.

He has delivered us a part of the product of twenty seven acres of land, one hundred and fourteen barrels, containing three hundred and eighty-two bushels of forty-five pounds of brown mustard seed, weighing fifty-two and a half pounds per bushel, making twenty thousand pounds, for which we paid him eight cents per pound, making $1,608 00.

And he has, he says, one hundred bushels of tailings, which he estimates will clean up seventy-five bushels; say fifty pounds per bushel, making three thousand seven hundred and fifty pounds, at eight cents, $300.

Product of twenty-seven acres of brown mustard seed, $1908 00, or $70 66 per acre. [*Farmer's Cabinet.*

THE YOUNG FARMER'S CATECHISM.

Composition of Animal Manures.

24. From the instruction already received, I infer that almost all manner of minerals, vegetable and animal substances, contain some aliment for plants.

Yes, every bone, every scrap of meat, and skin; refuse matter of all sorts; brickbats, stones, dead rats, cats and cattle; every chip, and all excrementitious substances; ashes, lixiviated or fresh, and almost all the scrapings, and rubbish, which the uninitiated shovel out of their way as nuisances, the intelligent husbandmen may, by due preparation and admixture, metamorphose into luscious peaches, pendant grapes that catch the wishful eye of many a reynard-boy, and into golden harvests and fat Durhams which gladden the heart of the hungry. Such are the wonderful transformations which take place in the laboratory of nature! A handful of rubbish to-day is a melting pear to-morrow.

25. I suppose it is necessary to subject all the hard masses to some mechanical operation, before they can be available plants.

The disintegration of the most refractory substances by common, natural processes, would be slow, inconveniently slow; and therefore, in countries where other fertilizing matters are rare, and of great exchangeable value, men go to much expense in grinding bones and reducing other hard articles to powder for their impoverished lands. But the natural richness of our Western lands, renders our farming community indifferent to those processes: and the more accessible and already comminuted manures are spread upon the fields. These manures are chiefly the excrement of domestic animals; and their composition, showing their value, is given as follows:

Of the Horse. (Recent.)

Evaporable matter,	- -	45 per cent.
Nitrogen, about	- - -	½ do.
Phosphate of magnesia.		
Phosphate of lime.		
Carbonate of lime.		
Salts of soda.		
Organic matters.		
Bile.		
Silicate of potash.		
Vegetable matter.		

Dana says, horse manure contains 3¼ lbs. of carbonate of ammonia in every 100.

Of the Cow. (Recent.)

Water, &c.	- -	86 per cent.
Nitrogen,	- -	½ do.
Phosphate of lime, Common Salt, Silicate of potash,	-	1¾ per cent.

Carbon,	6	do.
Hydrogen,	4-5	do.
Oxygen,	4 4-5	do.
Vegetable matter, &c.	16	do.

Dr. Dana found, that a cow fed on hay and potatoes, (24 lbs. of hay, and 12 lbs. of potatoes daily,) yielded in a year:

Of carbonaceous matter,	4,400 lbs.
Of phosphate of lime,	71 "
Of sulphate of lime,	37 "
Of carbonate of lime,	37 "
Of common salt,	24 "
Of sulphate of potash,	15 "
Of carbonate of ammonia,	550 "

The manure of a cow fed on meal and water, gave 2½ per cent. or five times as much nitrogen as common cow excrement; and in his language: "the nitrogen present in a manure expresses its true value.

Of Man. (Recent.)

Water, - - - ¾ per cent.
Nitrogen, - - - 1½ to 5 per. cent.
Phosphate of lime.
Phosphate of magnesia.

Of the Sheep.

Phosphate of lime.
Silicate of potash.
Common salt.

Dog's Excrement consists almost entirely of phosphate of lime.

J. T. P:

[*Western Cultivator.*

THE DISEASE IN THE POTATOES IN THE EAST.

Mr. Teschmacher, in the New-England Farmer, attributes this disease to a species of fungus on the tubers. He recommends a liberal supply of salt to be spread on the land to be planted next year in potatoes, where the disease appeared this season, as a remedy for it. Others attribute the disease to an insect. The Westfield Newsletter says:—"From some of the infected potatoes may be seen the insect in its pupa state escaping. In others, you may, upon boiling, find the rudiments of the insect in embryo, while in others, nothing will be found, the insect having escaped. As to the health of the potato, it is like all other defective fruits, but no worse, and when sound, as healthy as at any previous year. The insect feeds upon the leaves and stems, when full grown, retires to the roots of the potatoes, and there deposits its eggs, which soon hatch; in a few days, they retire from the potato to the ground, where it completes its final transformation."

VALUE OF CORN AND COB MEAL.

Every body who has fed a horse or an ox much with "*corn nubbins*" in the fall of the year, has noticed that he will eat the whole cob and all, and seem to prefer it to shelled corn. We once owned a horse that would'nt eat corn, any way you could fix it, unless it were on the ear, when he would "*munch*" the whole up together very greedily. Every one knows too, that when we feed an ox or cow on this, a considerable portion of the kernels of the corn pass through whole, undigested, and of course are the same as so much corn thrown away. Now for some proof that the cob part of the meal, is equal to the same measure of oats. We find in the New-England Farmer the following statements, quoted from the Massachusetts Agricultural Repository of 1843. It is a communication from Mr. Rice, of Shrewsbury. He is a stock raiser, and a man of great experience in feeding cattle. He gives an account of using cob meal, as feed, as follows:—"The second year, if I mistake not, in which I made use of cob meal, I thought I would try an experiment by feeding one ox with corn and oats ground, the other with corn and cobs, having a yoke of oxen so evenly matched that no one who viewed them was satisfied which was the best. Accordingly I fed as above. The cob is computed to make a little more than *one third;* therefore I mixed the other with one third oats, as was my former mode. I gave each ox an equal quantity at a time, except the one which had corn and oats sometimes became dainty and would not eat his allowance, while the other kept an equal course. The allowance of both was a little over three pecks per day When taken to market and killed, they weighed twenty-eight hundred and a half. The one fed on corn and oats weighed half a hundred the most; while the one fed on corn and cob meal was considered half a dollar per cwt. the best beef. The one fed on corn and cob meal had 163 lbs. of tallow, the other 162 lbs." From this experiment it will be seen what the comparative value of cob meal is.

We have been informed by a farmer's wife, that the meal from the cob, ground alone, when sifted fine, will make very fine "flap Jacks." We have also found by experiment that hens are very fond of corn and cob meal. Our hens would eat that which Mr. Pitts* ground for us, as greedily as they would corn, and this is the only way we know of to get cobs down a hen.

Here then, is a chance for farmers to make a great saving. If the cob meal amounts to one-third of that made by corn and cobs ground together, then the farmer who raises an hundred bushels of ears of corn and throws away his cobs, is equally as imprudent and foolish as he who raises *thirty-three and a third bushels of oats and throws them all away, when he has harvested and thrashed them.*

Maine Farmer.

* Pitts Corn and Cob Grinder.

THE SUNFLOWER.

This is perhaps, destined to become one of our most valuable agricultural products. One hundred pounds of the seed afford forty pounds of oil. The refuse of the seeds, after the expression, furnishes an excellent food for cattle. From the leaves of the plant, cigars are manufactured of singular pectoral qualities; the stalk affords a superior alkali; and the comb of the seeds is a choice dainty for swine. So says Mr. Ellsworth in his report.

TOBACCO.—MEDICAL TESTIMONY.

Observing of late, that many total abstinence, and some reformed men of distinguished ability are steeped in Tobacco, we publish for their notice and benefit, the following testimony of one of the most eminent physicians in England.

Sir,—During an extensive practice of more than thirty years, I never prescribed the snuffing, chewing, or smoking of tobacco, neither have I seen a single disease requiring its use in those forms.

Tobacco is a poison, an intoxicating agent, and the use of it produces baneful effects, particularly to the nervous system—injuring man both mentally and bodily—is a very principal cause of dispepsy, which is attended by a long train of nervous symptoms. I am satisfied no person ought to complain of low spirits who uses tobacco,—it produces the very complaints it is taken to relieve.

JOHN HIGGINBOTTOM, *Surgeon*.

Nottingham, April 25, 1842. *Ibid.*

INDIAN CORN IN ENGLAND.

In the New Farmer's Journal, a correspondent who signs himself "A Man of Kent," states that ever since 1829, he has succeeded in growing Indian corn, and having it come to maturity. The kind is Cobbett's yellow, or what is called here, Canada Yellow or Yellow Flint. The writer says—"I am sure that quantity for quantity, corn is, as food for horses, equal to beans, without possessing their heating property; for pigs and poultry, superior to the very best barley; for sheep, very superior to oats; and for bullocks, better, I think, than any thing, oil-cake excepted." Green corn for the table, he recommends highly; but hopes the people of England will never be obliged to resort to the use of corn for bread. Corn, as a general crop, can never be grown in England; the low temperature of their summer forbids it. [*Albany Cultivator*,

IRRIGATION, &c.

Mr. Tucker,—as far as my information has extended, very few attempts to adopt a systematic course of irrigation, even on a moderate scale, have been made by the farmers in Massachusetts, at least in this vicinity. Some years since, Gen. Wm. Hull, residing at Newton, attempted to carry on a course of irrigation, by bringing a stream of water which took its rise in his estate, into his garden and grass lands; by constructing a bank of sods on each side of it to sustain the stream, and by merely letting down one or two sods from it, whenever he wanted to bring the water on to his land.

According to the information which he gave me, his grass lands were rendered much more lucrative and valuable by means of the irrigation. Land, which previous to it, produced a worthless grass of little or no use, was made to yield one and two tons of good grass to the acre. I was informed that he was obliged to abandon the scheme from the great injury which it caused to one his neighbors.

Extent of irrigation near Roussillon. It is said that there is an extent of land, ten leagues in length by six leagues in breadth, all of which can be regularly irrigated by means of small canals and water courses, which are cut in every direction. The distribution of the water is regulated by law. The habitations are still, for the most part, congregated in small towns and villages, but here and there a detached house is to be seen. The plain is covered with trees, which border the water-courses in every direction. Among these the Lombardy poplar is conspicuous.

Cultivation near Seville. The principal exports from Seville, are bitter and sweet oranger and lemons. The sweet oranges are more cultivated than the bitter. The orange groves are estimated of great value. The trees are planted at the distance of 21 or 22 feet each way, and in good years, will yield from 1,000 to 1,200, and even 1,500 oranges each. They are irrigated every ten days, and the soil is disposed in small trenches to allow the water to spread.

WILLIAM JENNISON.

Cambridge, Mass., Oct 12, 1844. [*Albany Cultivator.*

SALT FOR FRUIT TREES.

A writer in the Boston Cultivator says a pear tree was killed by a quantity of salt having been left in an old flour barrel near the body of the tree. A heavy rain dissolved the salt and forced it into the ground among the roots. The tree soon exhibited signs of blast or decay, and on cutting off and examining the branches, he "found the leaves not only highly impregnated, but encrusted with a visible saline matter." During the summer, the tree died. Too much salt was undoubtedly the cause of the trouble. A small quantity has been recommended to be put round trees for the destruction of insects. The editor of the Boston Cultivator says two quarts is enough for a tree of "middling size."

LOWELL.

We are indebted to a friend for the statistics of Lowell manufactures; from which we learn that the whole amount of capital invested in manufactures in that place is over $11,000,000.

Bales cotton used per annum,			62,040
Pounds of Wool,	do.	do.	1,000,000
Tons of anthracite coal	do.	do.	12,500
Gallons of oil,	do.	do.	67,849
Spindles,	do.	do.	201,076
Yards of cloth made per week,			1,425,800

The amount of wool, 1,000,000 lbs. consumed in the Lowell factories, if we allow 3 lbs. to a sheep, would require for its production more than 330,000 sheep The same wool factories consume in the same period 3,000,000 teazles, another agricultural production, which yields a handsome profit to the producer.

N. Y. Farmer and Mechanic.

PICKLE FOR HAMS.

To one thousand pounds of Hams, take three pecks of salt, three pounds of saltpetre, two quarts of hickory ashes, two quarts of molasses, and two tea-cups full of red pepper; mix them well together on a salting table; rub the rind or skin of the ham well, and sprinkle with the balance; let it be from five to six weeks, then hang up and smoke with green hickory wood for five or six weeks; a little sawdust also, if convenient. The red pepper prevents the skipper, I think. If the hogs are very large, I think more salt will be required. I generally put the large hams at the bottom of the tub.

Ellsworth's Report.

NEW VARIETY OF WHEAT.

Several farmers in this quarter have cultivated a new variety of Wheat, for a year or two past, with great satisfaction. It is called Alabama Wheat, from the fact, that about half a pint was brought here from that State in 1839, by an observing farmer. After finding that it succeeded well in this climate, he disseminated it for seed, and it is computed that this year 2,000 bushels have been raised, chiefly in the Whitewater Valley. It takes the preference, by far, over all other kinds of wheat brought to this market, weighing from 64 to 68 lbs. to the bushel. Its yield has averaged about 30 bushels to the acre this season; and the crop was so forward, that at Harrison, in this county, it was all harvested by the 6th of June; one man in that place has raised this season 800 bushels, that sells quick at $1 per bushel, for seed. Its culture in this quarter, and in the neighboring parts of Indiana and Kentucky, has been largely extended this fall. The Clermont Fourier Association will alone sow one hundred acres with it. Mr. Bradbury, Mr. Fagin, and probably other millers here, are selling it to farmers for seed, at $1 per bushel. The supply, however, is far short of the demand.

Cincinnati Atlas.

THE WOOL TRADE.

According to the best calculation, says Mr. Williams, in his admirable address on the Tariff, it is supposed that there are about 34,000,000 of sheep in the United States, worth on an average about $2 a head, and yielding about 90,000,000 pounds of wool, worth at 30 cents per lb., about $27,000,000. These sheep, at three to the acre for summer and winter, would require 11,333,333 acres of land for their support, which at $12 per acre, which is considered a fair average, would be worth $136,000,000. To manufacture this clip of wool will require about 45,000 hands, who with families averaging three persons each, and amounting in all to 180,000, at a consumption of $25 per annum each, would require $4,500,000 worth of agricultural products for their support, which, at a net yield of $2,50 per acre for the market, would require 1,800,000 acres of land, worth at $12 per acre, $21,600,000. The capital invested, then, by the farmer in this business alone is about $225,000,000, and the annual value accruing to him, about 31,500,000, while the capital stock invested by the manufacturer himself in building, machinery, &c., to work up the whole annual product would not perhaps exceed $45,000,000 or about one-fifth of that of the agriculturist's. *Maine Cult.*

HOW TO SUSTAIN AGRICULTURAL SOCIETIES.

Those who desire to see their County Agricultural Societies increase in numbers, and in spirit and usefulness, should take pains to *increase the circulation of agricultural papers* among the farmers of their county. In no other way can the object be so easily gained. All experience and observation have shown that *reading farmers* are the only ones that can be relied on to sustain and carry forward these grand means of improvement. [*New Gen. Far.*

A SPEEDY WAY OF RAISING A BLISTER.

Take a watch glass, of the size of the proposed blister, drop into it from eight to ten drops of liquor ammonia—have a ready piece of fine linen, rather smaller than the watch glass; lay it neatly into the hollow of the glass, and immediately apply this to the skin freed from hair. In a short time, sometimes in from thirty to forty seconds, a red circle appears round the glass, and the blister is fmed. Darcq., in Gazetta Med. di Milano, quoted by London Med. Gaz.

N. Y. Farmer and Mechanic.